

A Scoping Study for “Sustainable Herefordshire” as a Sustainable Land-based Community

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Executive Summary

1. This report looks at the factors that affect the potential of Herefordshire to become a sustainable land-based community. It takes an holistic, systems approach to analyse a range of existing data about the situation in the county, and draws out a number of themes relating to the overall topic.
2. A major theme in the analysis is recognition of the importance of the "image" of Herefordshire, an image which relates strongly to its landscape characteristics. The Herefordshire landscape appears to have undergone less change in the last 20 years than has occurred elsewhere in the UK, and this continuity may be a valuable asset.
3. Noone appears to have an overall understanding of the economic system of the county, and of the interactions between the different activities that affect the land. In particular, there seems to be a dislocation between agricultural activity, with its major impact on landscape, and tourism, This could potentially be damaging to both activities.
4. Although the county has received significant economic aid from Government and the EU, the benefits arising from this are not clear, and few of the initiatives that have been funded appear to be sustainable even in the short term.
5. A major issue concerns population change, with an outward migration of young people and an inward migration of older, but probably affluent persons. This contributes to a perceived shortage of skilled labour, and many of the initiatives designed to support economic growth have been targeted at this skill shortage. The outward migration of young people may be associated with limited higher educational opportunities in the county.
6. The dependence on a limited range of economic activities makes the area particularly vulnerable to national economic fluctuations.
7. The dislocation between agricultural and other land using activities is made worse by the power relationships that exist between different groups.

"Environmental" and other non-productivist groups appear only to have limited powers, compared to production orientated activities. The powers of these environmental groups also tend to be seen as solely negative, trying to prevent change, rather than offering positive opportunities. There have been some good examples of positive land management, encouraged by organisations such as the Farming and Wildlife Advisory Group, and these need to be encouraged. Institutional use of indicators of sustainability that appear to demonise particular land use (potato production) does not encourage dialogue.

8. A conceptual model of a Herefordshire land use system is offered, that is designed to be used as a basis for discussion with stakeholders in the county in building a learning community.
9. The critical and close linkage between agriculture, landscape and the wider economy within Herefordshire suggests that establishing dialogue between agricultural operators and the wider public is essential.
10. Methods of achieving such dialogue and enhanced learning are available, and it is suggested that this offers a major opportunity for the Bulmer Foundation to promote the development of sustainable land use practices. This process of capacity building is widely regarded as an essential part of sustainable development.
11. Although indicators of sustainability such as Ecological Footprinting are valuable, their calculation for the whole county may be problematic. However, the ideas underlying such indicators are potentially important stimuli for discussion between stakeholders, and for modifying the views of those responsible for land use operations. Calculation, promotion and publication of such indicators for individual operations would be valuable as management tools and as evidence of good intent to other actors.
12. Developments in information technology have considerable potential within the area, although it has to be recognised that the dispersed population that this may encourage is not necessarily beneficial in terms of support energy needs. However, more radical developments that make use of IT are conceivable. These could include the use of the web for increased dialogue

between those involved, or the introduction of entirely new web-based communities.

13. A Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis highlights several areas of opportunity and concern.
14. There is a role for new technologies associated with renewable energy and for different forms of agricultural production and food processing/delivery to contribute to more sustainable land use.
15. The Bulmer Foundation is uniquely placed to enable and support the processes of dialogue that are seen as essential to the development of sustainable land use within Herefordshire.
16. The Foundation could support the use of a conceptual model of a sustainable Herefordshire land use system as a focus for discussion, and for identifying needs and processes associated with sustainability. Establishing and maintaining dialogue between the agricultural sector and others involved with land use would be very beneficial.
17. There is a need for a comprehensive model of the local economy, to gain a better picture of the way it actually functions. At present, economic data at an appropriate scale of resolution and encompassing all the economic flows in the county do not appear to exist. It would also be useful to consider the likely impact of legislative and other changes at a national level on issues within Herefordshire.
18. Support for initiatives to enhance Higher Education provision within the county could increase the attractiveness of the county to younger people and could counter the perceived loss of skills from the area.
19. Indicators of sustainability are valuable as a focus for discussion and change, and they are becoming more accessible as a result of developments in IT. Support for their dissemination and use within the overall learning process recommended in this report would enable a better informed debate to occur and could change attitudes within the land-use system.

20. There is the opportunity for developments in land use in Herefordshire to act as a model for activity elsewhere in the UK and Europe, with benefits to all concerned.

Background and Introduction

1. The 'Sustainable Herefordshire' component of Project Carrot is aiming to develop Herefordshire into an economically sustainable and environmentally-regenerative land-based community. This scoping study will define a context and concept of sustainable development in Herefordshire that provides a baseline for future, more detailed studies and for actions. Since Herefordshire has a strong identification with land-based activity, the study will identify those key questions relating particularly to *sustainable land use* and propose processes whereby answers to these key questions can be sought.
2. The development of a sustainable land-based community should strengthen links between humanity and the land and provide a practical exemplar of sustainable development for Europe and beyond. These are ambitious aims and cannot be achieved by tackling particular issues on an *ad hoc* basis as they arise. The aims need to be located within a strong analytical framework. Such a framework is provided by *systems thinking*, which recognises that in any situation there is likely to be a complex set of interlinking processes, and that there is a variety of perspectives on that situation, corresponding to different stakeholdings and to different experiences. These differences can lead to individuals and groups holding very different *models* of both the situation that exists and the changes that are feasible and desirable in this situation. This report will present one very generalised model of the situation, designed to be used as a basis for further discussion and interaction with those who will be involved in developing "sustainable Herefordshire".
3. Sustainable development, and a sustainable community do not represent some form of end state, since there will always be change both within the community and outside. To create and respond to change in a sustainable manner requires the existence of a linked set of processes, owned by the community, that enable that community to define its concept of sustainability, identify an appropriate development trajectory towards that concept and to react to changing circumstances. To build these processes it is necessary to identify and take account of appropriate systems within whatever is conceptualised as Herefordshire. The discussion process suggested above will

help to surface the different perceptions of sustainable land use systems that exist, and to encourage participants to identify feasible and desirable changes associated with land use.

4. Herefordshire is not just a defined geographical area, but can also be considered as an *economic system*, and as a community or *social system* with distinctive, but as yet unclear, characteristics. The economic and social systems are both likely to extend beyond the simple geographic boundaries of the county. It is therefore important to recognise that the boundary of a system of sustainable land use in Herefordshire is not necessarily self evident.

Methods

5. The study is based loosely on Soft Systems Methodology (Checkland and Scholes, 1999 and described in more detail in Appendix 1). The study draws on literature from a range of formally published and less formal sources, and from discussions with a range of players within Herefordshire, to create a general picture of the current situation in the county. From this information, a basic model of a *land use system* is created and some key themes are drawn out that relate to the question of sustainable land use. These are used as a guide to suggest further actions to clarify the situation and allow for learning to take place among the stakeholders in Herefordshire as a sustainable land use system. Key themes and actions are identified in the text by **boldfacing**.
6. The study emphasises the role of *learning* in creating a sustainable community. The idea of a learning organisation (Senge, 1990) has become widely accepted, and learning systems approaches to development are being formalised (Bawden, 1995). Learning systems are a way of conceptualising combinations of interconnected elements and processes, which together form a whole that has a purpose, in this case *learning*. A learning system's elements may include people, artefacts, events etc.. Its processes are usually part of a process of inquiry for dealing with the world by learning both about our own and others' perceptions of how things operate. Bob Macadam from the Centre for Systemic Development in Australia has focused particularly on *collaborative learning* in learning systems. He viewed collaborative learning

as an iterative process of finding out about the situation to be improved, making sense of this and taking appropriate action. In this context we are usually referring to the learning of those who are stakeholders, which may include those who 'own' the system, those who are customers or clients and other actors involved.

7. Learning systems ideas are useful for working out what elements and processes need to be included or excluded in a process of inquiry so that learning can take place that may help improve a situation, from the perspectives of stakeholders. Thinking of a situation as if it were a learning system has been shown to be helpful in standing back and exploring issues before focusing on the 'wrong' problem or opportunity. It can help legitimise a learning culture where people accept there are uncertainties and unknowns and a need to learn a way to improving that situation, rather than lay blame.
8. A *learning organisation* is one example of a learning system. The term 'learning organisation' has many definitions but it is generally used to describe an organisation with the facility to adapt quickly to the demands of a changing business environment, and the intention is that through continuous self-regeneration, it will flourish whatever the prevailing conditions. But learning systems can also be found at other levels too - where not just one but many organisations are involved and also within organisations.

Sustainable land use

9. *Sustainability* and *sustainable development* are both widely quoted, but remarkably elusive, concepts. They are clearly future oriented, but interpretations can range from the rigorous and demanding formulation suggested by The Natural Step (Nattrass & Altomare, 1999) or in Ecological Footprinting studies (Chambers and Lewis, 2001), to the much more general version originally coined by Brundtland (1989). This broader definition emphasises the satisfaction of current needs without compromising the ability of future generations to satisfy their needs and allows for a wide range of interpretations of needs. While it is less susceptible to being quantified, it may encourage much more active debate and involvement by those who are

actually affected. The situation has been clearly reviewed by Bell and Morse, (1999), particularly with regard to the usefulness of sustainability indicators.

10. This study will not attempt once more to define these concepts, but will examine some of the processes that may need to be taken into account, within Herefordshire, in identifying and satisfying needs. Ideally, it should be possible over time either to satisfy a wider range of expressed needs, or to achieve a higher level of satisfaction of the existing range of needs, without diminishing the resource base of the county. This would represent one realisation of sustainable development.

The current situation with regard to land use in Herefordshire

11. Herefordshire as a geographic entity has a boundary that corresponds to the unitary local authority. This boundary has historically been challenged in many ways, most recently in the local government reorganisation that initially combined Hereford and Worcester and subsequently disassociated Herefordshire in April 1998 to form the unitary authority. The current local authority boundary does not conform exactly to any clear social, landscape or geomorphological discontinuity, but it does have a strong local identity. This is apparent from tourism literature, from the arguments over local authority boundaries and from conversations with local residents. This identity appears to be closely bound up with perceptions of community and particularly of landscape. The Herefordshire landscape is intermediate between the more intensively arable and industrial landscape of Worcestershire and the West Midland conurbations and the more exposed upland landscapes of Powys and South Shropshire. Published economic and other data are generally presented for the administrative area of Herefordshire, but other aspects of sustainable land use, such as watersheds or land use types are unlikely to conform to this administrative distinction. This means that some data relating to sustainability may be difficult to obtain and interpret.
12. Land use in Herefordshire is dominated by agriculture. Out of the total of almost 216000ha, around 180000 ha is farmland and almost 18000 ha is woodland (Centre for Rural Research, 2000). The area under agriculture is

reported to have declined by 0.6% between 1998 and 1999, a reflection of the economic difficulties of agriculture over that period. It is not known precisely what land use has replaced agriculture. Conversion to woodland or to industrial/residential use are likely to be the major changes (Centre for Rural Research, 2000) but precise data do not appear to be easily available.

13. The number of agricultural holdings has generally mirrored the national decline since the 1970s, but with periods of gradual increase in holding numbers punctuated by major declines. The increases in holding numbers are postulated to be the result of increased interest in part time or “hobby” holdings (Centre for Rural Research, 2000). The distribution of holding sizes has changed little over this period, but, in line with national trends, there has been a gradual increase in ownership at the expense of partially or wholly rented holdings.
14. Although the county is strongly associated with livestock rearing, grassland and rough grazing represent only just over 50% of the agricultural total. It is claimed that every crop that can currently be grown in the UK is represented within the county, and the specialities of hops and apples are still important. In 1997, 1093 ha of hops were being grown on 87 holdings (MAFF, 1998). Since that date, the figure for hops has been included within “other arable crops” in the annual census. A total of 2266 ha is occupied by commercial orchards in Herefordshire and in 1997 there was a further 407 ha of non-commercial orchards in the old joint county (MAFF, 2000).
15. A major shift in land use within agriculture has been the increase in area used for potato production. This is partly a reflection of the particular soil types and climate, but is also a response to the generally depressed level of returns from other enterprises. This change has become a matter of policy concern at county level (Herefordshire Partnership 2000).
16. The total value of the economic output of agriculture in Herefordshire is estimated at just over £200m (Herefordshire Economic Assessment, 2000-2002). Combinable crops, such as grain, pulses and oilseed rape, and horticulture are the largest single components of this.

17. Detailed data on the economic situation of farms in Herefordshire are not available, but the county cannot be immune to the declines in farm income seen nationally. These averaged 28% between 97-98 and 98-99, although there had been an anticipated improvement between then and 2000. Anecdotal reports from rural support groups, and general press coverage would suggest that the economic situation for farms is currently serious, exacerbated by the foot and mouth disease outbreak. The economic position of agriculture is notoriously volatile, as documented over a long period by various University agricultural economics surveys, but the current position gives serious cause for concern.
18. The weakness of agricultural incomes has affected employment in agriculture within the county, with less than half of all holdings now employing any non-family labour. This is a contribution to the general level of unemployment and under-employment in the county. There have not been any recent studies of the precise linkage between the state of agriculture and other aspects of the county's economic health, but it is plausible that direct and indirect effects are considerable.
19. Although not formally recorded anywhere as a land use, tourism and recreation in the county represents an economic activity that relies significantly on the landscape, and hence on land use patterns. Tourist literature stresses the "unspoilt (*sic*) countryside, market towns of distinctive character and a wealth of varied landscapes..... The richness of the natural environment forms a backdrop to a more leisurely pace of life..... where innovation and inspiration blend in with the historic landscape of a rural past" (Herefordshire and the Wye Valley Visitor Guide 2001). While it is possible to dispute several of the adjectives used in this material, it emphasises the extent to which tourism is landscape dependent. Tourism is also a major aspect of the local economy. In 1998/9, 4.5 million visitors came to Herefordshire, spending an estimated total of £192 million, a similar sum to the economic output of agriculture (Heart of England Tourist Board, 2000). Direct employment in hotels and tourism is quoted as over 5% of total employment excluding agriculture for the county as a whole, and over 8% for

the rural areas (Herefordshire Economic Assessment, 2000-2002). This is certainly an underestimate of the economically active population engaged in tourism, since farm-based tourism is a major feature where farm family labour would be almost exclusively involved. In addition to those directly employed, every 100 jobs in tourism is estimated to generate an additional 14 jobs elsewhere in the countryside (Countryside Agency 2001)

20. In passing, it is interesting to note the way in which statistics for agriculture are frequently excluded from discussion of general economic activity, but are published separately. This disconnection between agriculture and other aspects of Herefordshire activity was commented on by several of those contacted and is explored further below.
21. A significant proportion of the land in the county is considered to be of high ecological and landscape importance with 9.2% being designated as Areas of Outstanding Natural Beauty and 51% designated as Areas of Great Landscape Value (Herefordshire Economic Assessment 2000-2002). This, again, reflects the perceived importance of landscape-related features of the county. Since most of the land is in agricultural use, there is often conflict between changes that are agronomically desirable, and the preservation of landscape features. Several groups and Institutions are actively involved in this context – English Nature, Farming and Wildlife Advisory Group (FWAG), the Environment Agency, Countryside Agency, Council for the Protection of Rural England (CPRE) and others. Herefordshire FWAG report positively on their activities in encouraging farmers to improve the prospects for wildlife on farms. In contrast, CPRE and some activist groups are much more downbeat in their assessment of the conflict between agricultural intensification and conservation. This again highlights some of the differences of perspective on what are essentially the same processes. The most recent review of agricultural landscapes by the Countryside Commission noted that, out of the seven areas studied intensively, the landscape in its Herefordshire case study had changed least (Countryside Commission, 1997).
22. In terms of the area of land involved, manufacturing, retailing and distribution occupy a relatively small area, although their contribution to the overall

economy of the county is highly significant. Sun Valley Foods, Special Metal Wiggins, H.P. Bulmer Ltd and Somerfield Distribution are all major employers of labour, although the largest single employer is the Herefordshire Council. The Hereford Hospitals NHS trust is the third largest employer.

23. Most economic activity in the county is currently predicated on access by road, with all the implications for (un)sustainability that this is recognised to entail. Rail connections are limited, although some specific initiatives have been taken, for example by H.P. Bulmer, to make greater use of this mode. Land use for road construction and improvement is controversial in all the UK, and Herefordshire is no exception. There has been a long-standing controversy over a second Wye crossing for Hereford, which in many ways typifies this type of conflict. It is obviously in the immediate interest of industry and commerce in the county that improvements in the transport infrastructure should occur. However, it could be argued that greatly increased accessibility to the county might mitigate against its success as a destination for tourism. The current target audience for tourism in the county is at the “high quality” end, for whom rapid access is not considered a priority; indeed, it may be detrimental to the perceived attraction of the area (Heavens, personal communication). Such issues highlight the necessity for exploring the systemic effects of potential plans, changes or innovations rather than considering them in isolation.
24. The final land use that needs to be considered is residential accommodation. Detailed statistics are difficult to find, but demographic data suggest that there is significant inward migration into the county by older people and professionals, who are able to offer prices for property beyond the means of younger locals. Property prices in the area have broadly tracked national data, but it is plausible to suggest that, again, the attractiveness of the local environment contributes to an inward flow of capital and possibly to an increased local cash-flow associated with these new occupants. However, inward migration will put additional pressure on existing health and possibly, education services and the demographic consequences of this may in the longer term be negative.

Economic and institutional aspects

25. Precise data about the economic flows into, out of and within Herefordshire appear to be limited and are certainly not widely disseminated. Data that are available are primarily concerned with employment, and with numbers of businesses. These data do not directly indicate the associated economic flows. One figure that is available suggests that the Gross Value Added per employee in manufacturing in the old joint county was almost 10% lower than the national average, but slightly above the regional average (Herefordshire Economic Assessment 2000-2002).
26. **The absence of a clear and comprehensive analysis of the economic flows within the county appears to be a major omission in understanding the sustainability of Herefordshire as an entity. The Bulmer Foundation would be well placed to encourage and fund such analysis.**
27. There is a generally agreed perception that the county has economic problems, especially with regard to low wages relative to the national average. There has been a general decline in agriculturally related employment, and alternative employment in the rural areas is not being created. Although the county has a slightly higher than average rate of self-employment, this appears to be mainly related to agricultural activity, rather than to new forms of employment.
28. The index of multiple deprivation, one measure of (lack of) economic activity in an area, places Herefordshire close to the average for the UK (Herefordshire Economic Assessment 2000-2002). This composite indicator combines measures of access to education, employment, health services, housing, other services and income along with measures of disability, at a ward level. Within the county, the most deprived wards were situated within Hereford city and Leominster, while those wards to the east of the county were generally the least deprived. This east-west divide was commented on by several of those to whom we spoke.
29. A further indication that there are serious problems within the area has been the prominence of activities by the Churches, Citizens Advice Bureaux and others set up recently, to tackle “rural stress”. The fragmented nature of the

rural population in the county impacts on the social welfare of the whole rural community, restricting peoples' access to local services, employment and social events. Although Herefordshire rural stress initiatives were born out of the difficulties within the farming community they are used by both farming and non-farming families.

30. The county forms the south-western edge of the area covered by the Regional Development Agency (Advantage West Midlands, AWM). The current economic strategy of AWM suggests that the rural areas within the region are the least well placed to develop compared to the urban centres of the major conurbations.
31. A wide range of economically oriented support activities has been undertaken during the last decade, by various agencies with greater or lesser coordination. Economic support can draw on funds from the European Union, from various forms of regional aid and from commercial or charitable sources, in addition to the services conventionally provided by local government. Responsibility for action is spread among several agencies such as the Local Authority, Advantage West Midlands and through the Ministry of Agriculture, Fisheries and Food, (MAFF).
32. The Marches area in general (Herefordshire, Worcestershire and Shropshire) has had access to three major sources of funding for economic development and regeneration since 1994/5. These were the EU Objective 5b criteria and more recently Objective 2, the LEADER Programme and Rural Development programme. For the whole region, these have provided access to funds of the order of £35m, expended on a wide variety of projects designed to improve the rural economy by addressing issues such as skills shortages, diversification and personal transport.
33. A review of these projects by CSR Partnership (personal communication) found that while there had been many successful projects, and in some areas, evidence of much more integrated activity, the long term benefit from many of the projects was uncertain, and difficult to demonstrate.
34. Although there had been some increase in collaborative working, in many cases, single interest or single use projects failed to capitalise on potential

synergies. The relationship between these major specific funding initiatives, and regular public spending by the local authority was often unclear. This lack of linkage between different activities reflects the particular difficulties within land use noted above. Many of the initiatives have been ostensibly linked to “sustainable development”, although most of the agencies have recognised that this is a problematic concept.

35. A further potential difficulty lies with inter-agency relationships, where administrative and cultural differences across the English-Welsh border can impact on the effectiveness of development projects. This will be further complicated by the EU encouragement for catchment-wide management of water resources, that will involve several counties and cross the English Welsh border.
36. Discussion with various individuals suggested that there were difficulties posed by the range of different agencies involved, with different geographic/sectoral interests. This often resulted either in overlaps or gaps in provision, but there did appear to be a lot of goodwill that needs to be built on, not lost.
37. Most of the economic measures proposed stress sustainability or sustainable development. However, it is not clear that there is any general agreement or acceptance of what exactly this implies. For example, many of the proposed actions, particularly those concerned with growth in transport to enhance economic activity, seem to be extensions of policies generally regarded as having negative implications for sustainability. All these development activities include reference to the skills base of the region, and to the need for increased, and continually updated, skills in the workforce.
38. The local authority, like all others, has a difficult task in balancing expenditure and income, but has taken positive steps to engage different sectors of the economy in dialogue over the future of the county through the Herefordshire Partnership.
39. The Partnership was set up as a result of Herefordshire receiving Pathfinder Status under the New Commitment to Regeneration. This is an initiative of the Local Government Association, to encourage the development of a

coordinated approach to strategic planning to address economic, social and environmental needs. It has lead partners of Herefordshire Council, Health Authority, Police, Chamber of Commerce, the Voluntary Sector (represented through the Community Council) and Advantage West Midlands whose lead officers sit on the Partnership Board. The intention is to “bring together the mainstream budgets of the major stakeholders in the county behind one set of priorities and targets” Partnership staff work on project development, management and monitoring of grants and programmes, community service activities and research. Within the Partnership there are Ambition Groups which have representatives from local and regional organisations and tie in directly with 10 "ambitions" in the Herefordshire Plan.

40. These “ambitions” are: to improve health, reduce crime and disorder, poverty and isolation, encourage communities to shape the future, develop Herefordshire as a place to live, protect and improve its distinctive environment, develop an integrated transport system, meet accommodation needs, promote business growth to create better employment and provide excellent education. These have been translated into targets, and a baseline survey has been instituted.
41. This initiative is to be applauded, although it still appears to be heavily oriented towards a vision of strategic planning, possibly at the expense of real participation by the community.
42. **There is a role for the Bulmer Foundation in supporting this initiative, encouraging the use of appropriate processes of participation and keeping the importance of land use to the fore.**
43. National agencies, such as the Countryside Agency, Environment Agency and English Heritage have interest in specific aspects of the county, but much of their strategic focus is either national or regional. While such work provides useful background, it may not be of immediate relevance at the county level.
44. English Nature has, however, been working with local farmers and FWAG, for example, on the production of farm conservation management plans. These are useful in a local context, and may provide valuable examples to other farmers, but may be less important to the wider issues of sustainability.

English Nature has also been working closely with Herefordshire Council on issues such as biodiversity and the production of environmental sustainability indicators.

45. In addition to the formal networks set up by the larger institutions, there are numerous informal networks and individual projects aimed at encouraging economic activity. Through their Green Gate initiative, the Partnership for Sustainable Herefordshire (not to be confused with the Herefordshire Partnership) has brought together a number of local groups interested in the more “grass roots” elements of sustainability to form a co-operative network. In its role as a facilitator it has assisted with web access, provided communications skills and enabled local groups to pool resources. The Partnership also has a further project producing a green consumer guide. At the community level, projects such as the Kington Connected Community are trying to make use of IT developments to provide economic and social benefits.
46. **The need to build relationships between different groups was a recurrent theme in discussions, and this could be an important aspect of work for the Bulmer Foundation.**

Demographic trends and education

47. The inward migration of older people, and the outward migration of younger ones has already been noted. This demographic change is generally regarded as problematic, since the ageing population will ultimately impose an increasing burden on health and social services while the loss of younger people reduces the potentially economically active population. Many employers have noted difficulty in recruiting appropriately skilled labour (Herefordshire Economic Assessment, 2000-2002).
48. However, the inward migration almost certainly brings in some economic benefits in the form of increased purchasing power, at least in the short term. The contribution to economic flows in the county arising from the investment income of inward migrants may be considerable, and should certainly be considered in any model of the economy. It has also been noted that many of

those migrating into the county have high skill levels, particularly in areas that are susceptible of sole trader/self employment activity. Graphic design and IT related activities are two examples.

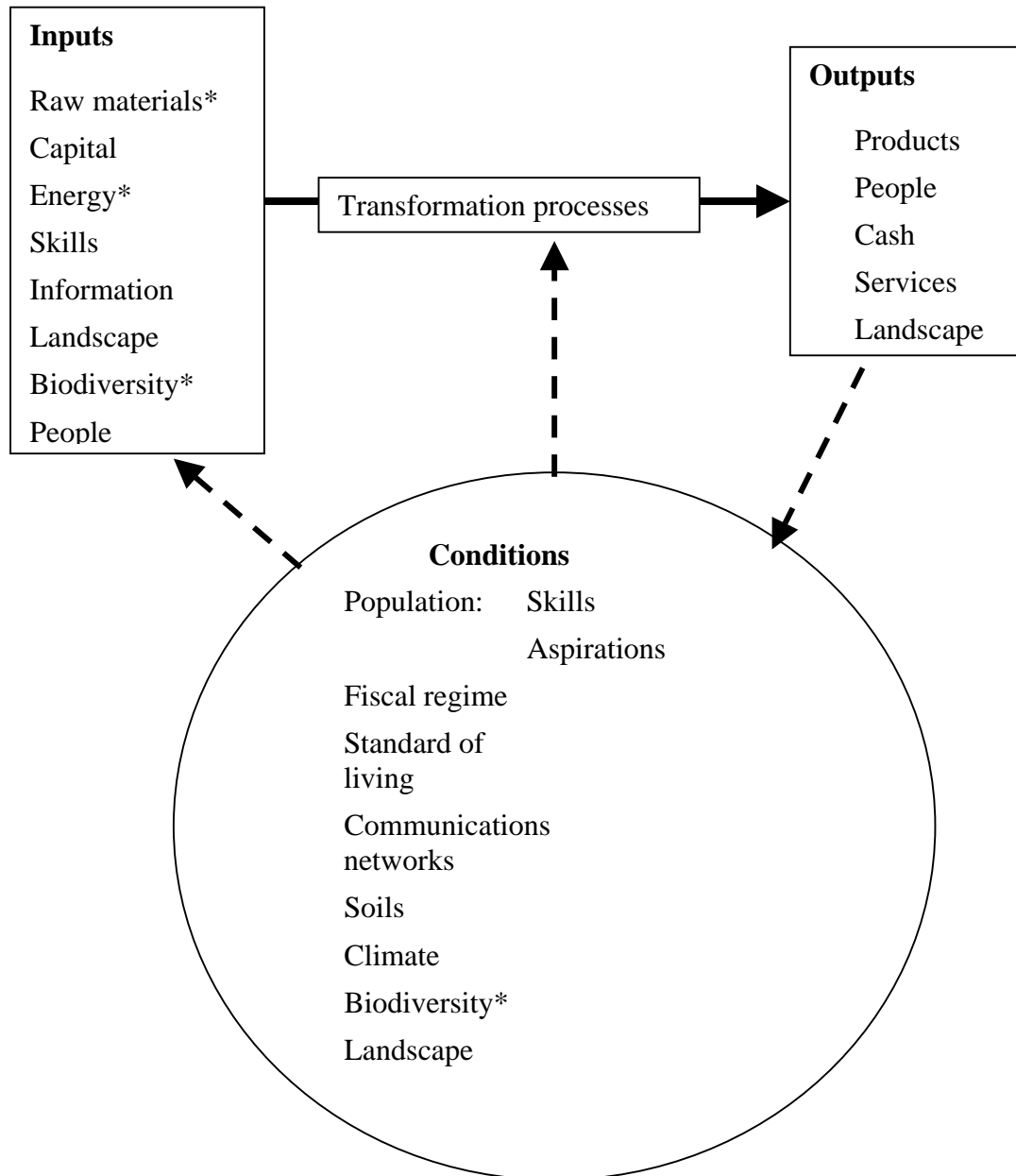
49. Herefordshire is almost unique in its low level of Higher Education provision, as one of only four counties without a University. Although there were proposals for the establishment of a University in Hereford in the post-Robbins round of the 1960s, this was not achieved. Currently, Worcester University College provides some Higher Education opportunities and the Open University provides distance-learning at Degree and Postgraduate level. There are several Further Education colleges that are moving towards provision at degree level, possibly as part of a consortium involving the OU and University of Birmingham. (pers comm). **The absence of any major centre of HE in the county is likely to contribute to the outward migration of young people, who "go away and don't come back". The existence of a Higher Education centre could help to create and support a community that would be attractive to, and help retain, skilled young professionals.**
50. There appears to be something of a paradox here. The area has many attractive features, especially for those of all ages seeking non-urban lifestyles. Yet there are also claimed to be difficulties in recruitment of skilled personnel, and lack of a social community for younger people. A significant part of the economic aid that has been provided to the region has been associated with raising the skill levels of the local population, but it is not clear that this has had any significant effect on the general mismatch between skills needs, employment prospects and lifestyle aspirations.

A model of Herefordshire as a land use system

51. We consider it would be helpful to set up a basic model of land use in Herefordshire, to identify the underlying processes involved and to consider to what extent these processes are working appropriately and in a coordinated manner.

52. Land use can be conceptualised as a transformation system as illustrated in Figure 1. Note that this figure focuses strongly on the biophysical processes that are involved, although it also relates to Hawken's and Lovins' ideas of the four forms of capital that can be deployed and managed for development (Hawken, Lovins & Lovins, 1999), with the addition of social and intellectual capital. Different observers may identify different structurings of the situation, but it is difficult to get away from the importance of the biophysical and economic processes associated with land use.
53. In this model, there is a series of *inputs* to the geographic entity that is Herefordshire (although we recognise that the geographical boundary may be only one aspect of the concept of Herefordshire held by the stakeholders within it and in its environment). These inputs are converted into *outputs* by transformations within a "Herefordshire land use system"; some of these outputs pass out into its wider environment, others are retained within the system as changes in its structure or processes. The way in which the input-output transformations occur depends on the *conditions* that pertain within the system and in its environment. These conditions can change over time, and indeed may be changed by the operation of the system itself. Examples of these transformation processes and the conditions that affect them are given below

Figure 1: Herefordshire land use as a transformation system



54. It is important to note that some aspects of the system can be both inputs and outputs, such as people moving into and out of the county. People are also changed by the processes that occur. Other features such as biodiversity may appear in all three categories. Thus biodiversity and landscape are important inputs to the tourism industry in the country, and may be changed by that industry or by agriculture. They are also important conditions, determining the way that other internal transformation processes can occur.

55. Examples of transformation processes that take place affecting land use are given below:

Agriculture – the inputs to this include land, labour, materials and fuels and these are transformed into materials for sale, wages/management income and landscape, but also into waste materials that are regarded as pollution. Agriculture is affected by conditions of soil type, skills base, climate/weather, fiscal policy, legislation, attitudes of operators etc.. The attitudes of agricultural personnel have been studied extensively, particularly as they affect the management of “landscape” and other apparently non-agricultural features, (Oreszczyn and Lane A, 2000; Carr, and Tait, 1991; Beedell and Rehman, 1996). Given the crucial role of agriculture in land use, this is likely to be a key area which needs to be better understood.

Tourism – Also requires inputs of labour, facilities, materials and people (as audience/customers). The outputs of the process include audience experience, wages/management income and wastes. Tourism is affected by similar conditions to agriculture, but is also affected strongly by landscape (mainly an *output* from agriculture) and also by accessibility, image, national economics etc.

Industry – inputs of capital, skills, labour, materials and fuels, to produce products, income, wastes. Strongly affected by skills base and accessibility.

Service provision – similar inputs to industry, but producing services such as retail provision, healthcare, education, entertainment. There is some overlap here with tourism, but given its importance to the area, it is useful to regard that as a separate process

Other economic activities – e.g. self employment in craft or professions, taking inputs of raw materials or information and skills, to produce products or services,

and income. Affected by conditions of landscape/community, accessibility and national economics.

Population change - Processes of in-migration and out-migration of people, affected by conditions of employment opportunities, landscape/community and national economy.

56. A major feature of the land use system is the interlinking that occurs between different activities. People are both consumers of the outputs from some of the processes, and also managers or workers in those processes. There are direct economic relationships through supply chains and service provision between the processes. Finally, there is the recurrent importance of landscape, which can almost be taken as a defining feature of “Herefordshire”. Change in landscape is particularly the result of agricultural processes, although it can also be affected by other economic activities and particularly the financial and regulatory provisions of the Common Agricultural Policy. It is crucial to the tourism process, but also affects the general quality of life for residents. The related concept of biodiversity is also a common thread, and one which may have particular importance in the context of sustainability.
57. The asterisked items in the model are often used as indicators of sustainability. These relate primarily to the biophysical state of the system and are undoubtedly useful as a starting point, but they give only a partial picture.
58. This proposed conceptual model of a land use system is potentially quantifiable, giving detailed values for the different inputs and outputs and for the relationships between variables that affect these values. Some detail, such as a comprehensive summary of the economic flows mentioned above would be highly desirable, as a means of obtaining a better overall picture of the situation, but a fully quantified model would involve enormous effort. While such a fully quantified model would be interesting, it may not contribute significantly to managing sustainable land use as there is no obvious owner of a “sustainable Herefordshire land use system” who could act as customer for such a model
59. Although a fully quantified version of this conceptual model may not be appropriate, the outline model itself is potentially very useful as a basis for discussion and debate. It is apparent that at present, there are significant gaps in

the debate among the different actors involved in Herefordshire land use. Suitably presented, a simple model of sustainable land use could provide an opportunity for structuring debate among all these actors and for shared learning. It could help actors to recognise what are the essential qualities and characteristics of Herefordshire, what it is that makes it special. Debating and refining such a model would help to identify the essential environmental and community assets of the area (its natural capitals), how they are used and how they contribute to economic survival and development and to the accepted social and amenity values. As Craig Simmons of Best Foot Forward has observed "Basically, solutions are the same whichever measurement methodology you use - the challenge is to motivate people to act".

- 60. We strongly recommend that the Bulmer Foundation support the production and use of appropriate models as part of the process of achieving dialogue about sustainable land use.**

Actors and power relations

61. The "actors" are all those people involved in the human activity system associated with Herefordshire land use, residents, landowners, business people etc. Since we are dealing with the longer term, it is also possible that new actors may need to be considered, both within the area and in the wider national and international arena. The term actor may carry less implications than the alternative term *stakeholders*, but it is important to recognise that different groups can claim different degrees of stakeholding in the situation. The nature of stakeholding varies, including economic, special interest and ethical and moral positions. It is not possible to rank these objectively, but equally, it is also the case that different groups have differing access to power to influence land use. They are also likely to perceive sustainability and how to achieve it in different ways. The agricultural industry is one major grouping, with a dominant influence in this context, but the tourism industry and residents (who may be self supporting but not formally economically active) also have a major stakeholding in what happens to the land. Industrial and

commercial employers, their shareholders and employees represent other stakeholder groups. While not so directly concerned with using land, they do have some influence over the way the land is used, through formal and non-formal networks. For the self-employed craft or professional workers, land use may represent little more than a backdrop. Young people represent an important, though heterogeneous group in this context. They are the future, but it is not clear to what extent they are engaged in, or even concerned about, the decision making processes that determine land use.

62. A major way in which stakeholding and power are expressed is through economics, primarily in the form of employer - employee relationships, but also through capital ownership. The owner-occupier status of a majority of farms in the area gives this group substantial power over land use. The current economic climate for agriculture may encourage many in this grouping to realise their capital; the effects of this on land use are difficult to predict. If the land is sold to strongly productivist interests, the outcome could be a growth in large scale, input-intensive production, or at the other extreme, land sold as amenity may be managed for very different objectives.
63. Formal power is also held by the Local Authority, as the planning authority for the area. The Local Authority now has a general power over social, environmental and economic wellbeing, although this is not a formal Duty. Their actions are influenced through the ballot box and by central government and economically powerful stakeholding groups. Specific mention should be made of the Local Agenda 21 process which, in common with other such initiatives around the world has attempted to raise issues of sustainability within local areas. Herefordshire appears to have been more active than many authorities in this process, but the general picture across the UK is not encouraging. The Herefordshire Unitary Development plan refers to a range of activities that should support sustainable development, but the implementation of much of the activity in the wider countryside is outside the powers of the Council. The Herefordshire Partnership has a major role in coordinating initiatives within the county and deserves support.
64. Agencies such as the Environment Agency and Health and Safety Executive have power to ensure compliance with legislative standards, and so have some

opportunity to prevent the worst excesses of land degradation, but less to encourage positive benefits. Recent developments such as the Environment Agency's Local Environment Agency Plans (<http://www.environment-agency.gov.uk/strategy/strategy.html>) and the EU Water Framework Directive (2000/60/EC) represent moves towards more positive environmental management. Other environmental standards such as ISO14000 and EMAS also have a positive role to play, not least as a means of changing attitudes and awareness.

65. The organisations associated with nature conservation in the widest sense have relatively limited powers. They are mainly restricted to working by persuasion or through drawing attention to failures to implement legislation, or to breaches of existing legislation. This role as "guardians" of nature can lead to direct conflict or at least disagreement with the agricultural community, but their advocacy skills have probably been influential in changing the general climate of opinion within the community.
66. Informal power relationships exist through some business and community networks. These include the Chamber of Commerce and the Tourist organisations, although it is noticeable that agriculture and other land use generally has only limited representation on these. The less formal networks such as Partnership for Sustainable Herefordshire mentioned above, groups such as Women's Institutes, and others associated with leisure time can also provide some power through advocacy and through encouraging actions at a local level.
67. Government policies have direct effects through economic or fiscal instruments and through legislation. Government also sets the general agenda within which local negotiation over decisions takes place. There is a general perception that "green" issues suffer from wide fluctuations in their prominence with Government. This may be partly a response to transient public concerns, indicated by data from public opinion surveys. These show that while the level of interest in green issues remains generally constant, they are rarely at the top of peoples' worries. The dominant issues change over time, but only rarely are sustainability or other green issues in that dominant position (Brown, 1992).
68. People have been found to be generally unfamiliar with the idea of sustainability but they identify positively with the values and priorities of sustainability once

they understand what it means. Studying the perceptions of sustainability in Lancashire, Macnaghten, Grove-White, Jacobs and Wynne, (1995) noted the importance of trust in developing sustainability indicators. The public has an intensely sceptical attitudes towards official institutions. **For indicators to command public confidence they need to be perceived as being unbiased and meaningful at the local level and their development requires open consultation on an on-going basis. Indicators that are useful are those that are owned by the local community and are locally relevant.**

69. Historically, in Herefordshire, elsewhere in the UK and internationally in most of the developed world, agriculture and land-use has been seen as an activity apart. Within Europe, financial support for the industry has been a major aspect of policy, but there appears to have been little attempt to develop linkages between agricultural land-use policies and other economic activities.
70. There is increasing recognition at all levels that the agricultural industry needs to find ways to re-connect its activities with the general public, who are the ultimate consumers of its products. Life cycle analysis of food products generally supports the idea of increasing production for local consumption, especially where this can be combined with the best features of industrial food processing (Sundkvist, Jansson and Larsson, 2001). These authors also suggest that an increase in connection between farmers and consumers can also encourage the farming industry to recognise and accept the legitimacy of public concerns about methods of production. The reciprocal recognition of the needs of farmers would also be enhanced. The growth of Farmers' Markets, and other means of direct selling represent one positive aspect of this, but much more needs to be done. Pretty (2000) has commented favourably on the role of more localised production and consumption of foodstuffs in enhancing the sustainability of land use.
71. **The critical and close linkage between agriculture, landscape and the wider economy of Herefordshire suggests that the establishment of understanding and dialogue between agricultural operators and the wider public is essential.**
72. Dialogue can only take place where the full range of participants is able to engage with the process, and is more likely to achieve good results if properly designed processes for the dialogue are in place. There is a need for skilled facilitation and

a role for educational institutions in providing both a setting for dialogue and information to support that dialogue. This is part of a general process of capacity building that is required to support sustainable land use.

- 73. The Bulmer Foundation has a major role to play in encouraging and supporting this process of dialogue. It is in a unique position to do this, as a result of H.P. Bulmer's strong links with both the farming community in Hereford, with the hotel and catering industry, and with the wider international financial and business communities.**
74. Any commitment to behavioural change which is legitimately recognised as being on a trajectory towards sustainable development requires a supportive social and institutional setting in addition to an awareness of the biophysical constraints and possibilities. An increasingly important element of this is *learning about learning* so as to change. This may include formal and non-formal education and training but we suggest that this alone is not enough. We contend that there is a need to be concerned with embodying a learning or 'social inquiry' approach into most of our everyday activities. This requires both a change in mindset and capacity building for the design and facilitation of learning systems (LEARN, 2000). A crucial output of a 'learning system' is the capacity to use the experience to design further learning systems and thus to sustain the cycle of participation in and generation of novel learning systems. The emergence of the World Wide Web provides further opportunities: there are many self-organising communities of practice who are facilitated in taking collaborative action via the enabling technology of the web. In the case of Herefordshire, the web will have a role to play but other new institutional arrangements, facilitation, and the use of models that are able to trigger new insights as part of a learning process will be required.
- 75. There is a further opportunity here for Herefordshire to take a lead through the Bulmer Foundation in changing the socio-economic climate within which debate about land-use policy occurs. The existence of a functional and adaptive model of sustainable land use could be of enormous value, if used to facilitate stakeholders' engagement with the issues and learning about sustainable development in this context. The Foundation has the advantage that it can be seen not to be either representative of a particular vested**

interest, or to carry the threat of legislative or fiscal restriction that might be brought by Local or National Government agencies.

Data and information

76. A lot of information already exists concerning Herefordshire, but not always in forms that are accessible to or appropriate for different stakeholders. The Council sees itself as a major user and provider of data, and has in-house expertise in Geographic Information Systems (GIS) that could be used to advantage in presenting information to facilitate the processes of discussion. Increased access to internet facilities could enhance this, but the use of such data by stakeholders may be limited if charges are made for access to it.
77. In common with other counties, Herefordshire has undertaken a major initiative to produce indicators of sustainable development in response to Central Government targets. The usefulness of the indicators chosen by the county is debatable for day-to-day, or even strategic management of land. The indicators used for agriculture comprise four numbers, one of which is the area under potatoes. While soil erosion and other problems associated with potato production are significant, it is difficult to see how such an indicator can be used, other than as an indicator of historic change. In addition, by demonising a particular land use, this indicator could even lead to polarisation of attitudes and a further deterioration rather than an agreed programme of action to mitigate or ameliorate the situation. Indicators need to be used systemically to get an appropriate picture of what is happening, and the indicators themselves need to be contextualised, rather than being used in a reductionist manner.
78. Key aspects of physical sustainability are associated with use of non-renewable resources, with greenhouse gas and other pollution emissions and with loss of biodiversity. Indicators such as Ecological Footprinting and those within The Natural Step are valuable in alerting the public to the current situation, and as calls to action, (Lawrence, 1997), at all levels from the local to global. Their derivation for a rural area such as Herefordshire is problematic, for several reasons. As noted above, while the county boundary is clearly defined on maps, data for inputs and outputs across this geographic boundary are difficult, though not impossible,

to obtain. The contrast with the situation on the Isle of Wight, where a recent footprinting study was conducted (Best Foot Forward, undated), is instructive. Even with the clear physical boundary of an island, some data were still uncertain..

79. Derivation of these, and other appropriate indicators is easier, and may be more useful, at the level of the individual farm or firm, where data are held by the operator and action can be taken by that operator in response to the analysis. Care is still needed that less easily measurable features such as landscape are not omitted from the analysis.
80. It can be argued that some processes associated with land use are demonstrably unsustainable. Those that dissipate large quantities of non-renewable resources, that are inefficient in use of fossil fuel, have deleterious effects on soil or that greatly reduce biodiversity should all probably be avoided. It is possible that, in the longer term, the market will provide financial signals that will encourage changes that lead to increased sustainability, although the evidence is not convincing. Fertiliser use in Herefordshire and in the UK generally has reduced in response to such signals, but the situation with regard to fossil fuels remains problematic. In some areas of the county, soil erosion is also potentially serious but carries no immediate economic penalty.
81. **Calculation, promotion and publication of independently validated environmental management indicators for agricultural and other land uses would be doubly valuable. They would provide management tools for the individual entrepreneur and would also indicate to the wider public that operators were taking seriously their stewardship of the land.**
82. The internet can provide both the means to facilitate calculation of these indicators, and to disseminate the calculated values for open discussion among the range of stakeholders. There already exist software on the web for such calculations, but access to this and appropriate skills to use them effectively needs to be supported.
83. Moving beyond crude indicators of biophysical sustainability to consider social aspects is at least as important, but fraught with similar difficulties to the calculation of biophysical indicators at a county level. Again, it is easier to apply

concepts such as The Natural Step or triple bottom line accounting within a unitary organisational whole. Identifying that whole for Herefordshire is likely to be difficult, but making the attempt would be very valuable as providing a platform for debate.

84. Determination and dissemination of sustainability indicators is thus potentially very valuable, providing that people have the opportunity to discuss and contextualise these, but is also a costly exercise. There is a need for, at the very least, pump priming funding and provision of expertise to undertake this sort of activity. The education sector in the county, in conjunction with partners such as the Open University and supported by the Bulmer Foundation, could have a major role to play in building capacity for this form of assessment, and in holding and disseminating information that is relevant both to the individual manager and to the community.

85. New information technologies have a major role to play in this derivation and dissemination of indicators. Access and skills in IT are currently claimed to be at a relatively low level in the county. Provision of learning opportunities to enhance these skills could support the effectiveness of sustainability indicators and is likely to be valuable as part of the development of communities (see, for example, Alexander's visionary concept of e-Gaia as a sustainable community <http://sustainability.open.ac.uk/gary/coherentcultures/index.html#eGaia>).

86. Information Technology should have a role to play in the processes of dialogue suggested in section 10. The use of the web for this is still in its infancy, but the electronic and social technology is advancing rapidly, as instanced by Open University (2001), Dialogue by Design (2001) and others.

SWOT analysis of "Herefordshire as a sustainable land based community"

87. A useful tool in considering the position of Herefordshire as a sustainable land-based community is an analysis of its Strengths, Weaknesses, Opportunities and Threats (SWOT). Such an analysis is presented below.

88. Strengths

Landscape, biodiversity, inaccessibility, “lifestyle” are all features that seem to represent strengths of the county, at least to some of its current and potential users and inhabitants. Many residents appear to possess a **strong identification with Herefordshire as ‘their’ local place** which is a strength that may be capitalised on for sustainability purposes. The existing **support and enthusiasm** for sustainability at the local level from individuals and those within local organisations is also a strength offering a foundation of **local networks** from which to work.

89. Weaknesses

Inaccessibility, vulnerability to economic downturn in the rest of the economy, restricted employment base, lack of IT infrastructure are all current weaknesses, at least in economic terms. Also the **dependence on a limited number of major firms** plus the **reliance on tourism** makes the area economically vulnerable. Inaccessibility is both a strength and weakness, as noted earlier, and applies to links both within and externally to Herefordshire.

90. Opportunities

The professed **interest in sustainable lifestyles** evidenced at national and international levels could offer a major opportunity for the county, if that interest grows or if Herefordshire’s example can encourage it to grow. The **attractiveness of the county to self employed professionals** could lead to improved IT provision, which in itself could lead to the growth of an IT-based economy. This would appear to be highly compatible with environmental sustainability, although the environmental cost of provision of fuel and other physical services to a dispersed entrepreneurial population has not been properly evaluated. **Renewable energy systems** could offer opportunities here, with biomass and wind resources and the possibility of micro-hydro provision. In the short term at least, there appear to be opportunities for land-based activity associated with quality food products and with quality tourism experiences. Recent well-publicised research into organic apple production (Reganold et al 2001) is one example of such a development which is highly relevant to the county. Opportunities also exist to build on existing the informal social and cultural networks which may be

neglected by official institutions and to capitalise on the talent entering the county (not just IT skills).

91. Threats

As noted under weaknesses, the economy of the county is potentially vulnerable to national economic downturn or to a major change in holidaying habits.

Landscape degradation through inappropriate agricultural technology, or tourism provision could destroy Herefordshire as currently perceived, although change clearly has occurred in the past and will in the future. A major threat to the sustainability of agriculture, although one that has received relatively little attention, is **epidemic disease**. The current foot and mouth disease outbreak may be a timely reminder of that threat, but epidemic disease or pest outbreaks in the primary crops (increasingly likely given the narrow genetic base of most current crops) could be even more serious. **Poorly thought-out developments**, designed simply to provide some apparent localised economic gain, may also threaten the sustainability of whatever is unique about Herefordshire. The current perception seems to have swung back towards a situation where economic development and environmental concern are seen as mutually incompatible, to the potential disregard of the latter.

Proposals for future work

92. It is clear that Herefordshire is bound to change over time. To be sustainable, it needs the capacities to be able to respond to that change. But response cannot simply be reactive. “Herefordshire” (i.e., the community of stakeholders) needs to be able to recognise what it is that the community wishes it to be, and how it wants to manage itself to achieve this. This will require the development of the facilitation and innovation skills to work towards those aims.
93. The alternative is for the area to simply react piecemeal to the various events that take place, with the Council and other agencies trying only to mitigate any deleterious developments. Given the importance of the environment and landscape within the county, opportunistic development is likely to be damaging.
94. It is clear that the Bulmer Foundation is likely to have a pivotal role in building capacity for sustainable land use within Herefordshire. It is uniquely connected to

two of the major economic activities within the area, and the history of social engagement by H.P. Bulmer gives it legitimacy that may be less readily accorded to other institutions.

95. This scoping study has explored issues of sustainable land use, the current situation with regard to land use in Herefordshire, economic and institutional aspects and demographic trends. It includes a conceptual model of Herefordshire's land use as a transformation system, discussion of actors, power relations, data and information and a SWOT analysis of Herefordshire as a sustainable land based community.
96. There are many ways forward for those wanting to move from rhetoric to action. Our recommendations for future work in this area are given below.
97. **A seminar to present this report to sponsors to enable them to engage with its contents, to share interpretations, challenge any assumptions made and to work out future strategy for action.** This would be essential to build commitment to the processes of social learning that are recommended.
98. **Build more detailed models of the “Herefordshire system”, as a basis for discussion with a range of the actors and implementers involved.** Using the initial model outlined above, more detailed data can be sought, and representations produced that can be presented to those involved on the ground. This is potentially a major piece of work but could, in our view be a worthwhile investment if participatory methods are used. It should then be possible to test the model against the perceptions of those involved, to validate or redesign the model as part of a process of shared learning.
99. **Identify and involve stakeholders.** The success of the process of shared learning depends on the presence of an inclusive and appropriate group of stakeholders. Identification of this group is not a trivial task, and needs taking seriously since exclusion of groups that feel themselves to have an important stake in “sustainable Herefordshire” runs the risk of increasing opposition. There are different levels at which this work could be done. The situation is already affected by lack of coordination between groups, and work to reduce this is likely to be very productive.

100. **Design a learning system to build capacity for sustainable land use in Herefordshire.** The discourse process suggested in the preceding paragraphs is part of the design and implementation of a learning system to support or achieve sustainability. This cannot be simply an end state, but the designed system has to be able to obtain the widest range of information about itself and about its environment, and to use this information to support decision making by all those concerned. The information may be hard (as in the case of some of the biophysical indicators of sustainability) or more concerned with the perceptions and attitudes of those involved. There need to be opportunities for these “softer” forms of information to be surfaced and taken into account. Without this, there is a danger of the imposition of “top down” or similar solutions to which there may be limited commitment, or indeed even outright opposition, from those affected. Despite its commitment to community involvement, there is a danger that the Herefordshire Partnership could be seen as still representing such a “top down” organisational model.
101. Within such a learning system, the participants should be able to clarify their needs for learning in order to build capacity within Herefordshire for sustainable land use. Some aspects of these needs have already been suggested above. For example, there is a need for skills in facilitation of dialogue, as well as particular skills in novel systems of land-use.
102. Discussion with participants is likely to identify a range of other needs. Associated with land use, there is likely to be a need for customer related skills for tourism, as well as education and training in organic and other novel forms of agriculture. New technologies for renewable energy use on the farm would appear to have major implications for sustainable land use. At the same time, much of the value associated with land-based products (both food and recreation) needs to be added within the local area. Locally based food-processing and delivery of land based recreational activity are both areas where increased skill levels could provide major dividends.
103. Fundamental to the provision of learning is the recognition of demand pull for particular skills, as well as the push that has been exerted in the past by providers.

The identified skills teaching may occur in formal and informal settings, using the whole range of learning technologies, including distance learning.

104. **Carry out an audit of relevant national and supra-national policies and map existing and planned local initiatives.** There is a need for an audit of national and supra-national policy initiatives that are in existence or proposed, to identify potential synergies for enhancing the initiatives outlined above, but also to identify factors which could undermine any locally derived initiatives. Overlapping and sometimes competing interests of different institutions associated with land-use management in Herefordshire mean that there is a need for a more detailed mapping of how these initiatives constrain or enhance moves towards sustainable development. The outcomes of the mapping should be used to design further dialogue scenarios where conflicts can be exposed, synergies capitalised on and new institutional arrangements devised if needed.
105. The Open University is prepared to submit more detailed proposals and specify what role it could take if sponsors wish to proceed with any or all of these linked initiatives.

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Open University (2000) T306 *Managing Complexity. A Systems Approach*. The Open University, Milton Keynes.

Open University, 1998 T860 *Environmental Decision Making: a systems approach*. The Open University, Milton Keynes.

Joyce Tait and Dick Morris (2000) Sustainable Development of agricultural Systems: Competing Objectives and Critical Limits *Futures* 32. 247-260

Selected Web sites relevant to the study

Advantage West Midlands: <http://www.advantage-westmidlands.co.uk>

DTI sustainability web site: <http://www.dti.gov.uk/sustainability/2.htm>

Environment agency: <http://www.midlands21.org.uk/environment-agency/>

Examples of best practice in sustainability: <http://www.iclei.org/europractice/>

Maff: <http://www.maff.gov.uk/maffhome.htm>

<http://www.globalactionplan.org.uk/athome.htm>

The Green Gate Network: <http://www.greengate.org.uk/>

Herefordshire clubs and organisations: Herefordshire and Worcestershire RIGS

Group: <http://www.worc.ac.uk/rigs/locallinks.html>

Herefordshire Council

<http://www.herefordshire.gov.uk/>

Herefordshire Libraries and Information Service, list of local organisations:

http://www.librariesinfo.herefordshire.gov.uk/clubs_and_soc_list.htm

Hereford and Worcester Business and Online Community

http://www.herefordshire.gov.uk/plan_forward_planning.htm

This is Herefordshire:

<http://www.thisisherefordshire.co.uk/herefordshire/hereford/info/>

Best Foot Forwards: <http://www.bestfootforward.com/>

DETR Sustainable Development Site:

<http://www.environment.detr.gov.uk/sustainable/index.htm>

West Midlands Rural Network: <http://www.ruralnetworkwm.org.uk/>

Appendix 1 Soft Systems Methodology

The Soft Systems Methodology was created by Professor Peter Checkland of the University of Lancaster as a means of interacting with situations which are experienced as “very complex, problematical, mysterious”. It hinges on the creation of a rich *representation of the situation* from as wide as possible a range of perspectives among those involved in the situation. From this representation, one or more *themes* are identified that appear to relate to the perception of the situation as being a problem. These themes lead to the design of a *conceptual model* or *models* that represent *systems* that could operate on the identified issues. Comparison of these

conceptual models with what appears to exist in the actual situation is then used to articulate *debate about changes* in that situation that are regarded by the participants as feasible and desirable. This list of feasible and desirable changes can then become an agenda for action.

A diagrammatic model of the original methodology is given below (Checkland & Scholes, 1999)

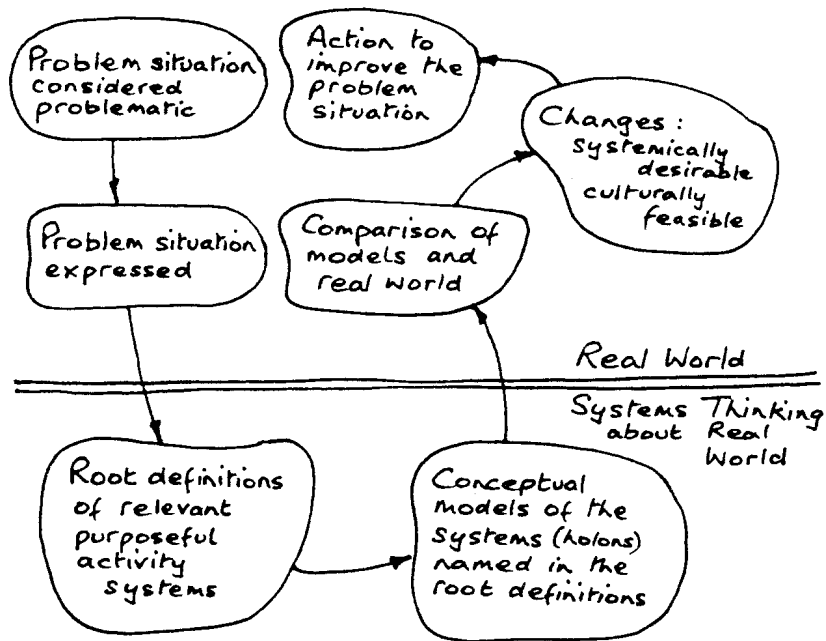


Figure 2. Soft Systems Methodology in outline.